ATOMIC ENERGY newsletter

THE FIRST AND ONLY ATOMIC NEWS SERVICE

ROBERT M. SHERMAN, EDITOR. PUBLISHED BI-WEEKLY BY ATOMIC ENERGY NEWS CO., 1000 SIXTH AVENUE, NEW YORK 18, N. Y.

November 18th, 1952
Vol. 8...No.7

Dear Sir:

The first U.S. thermo-nuclear detonation experiments have been successful, the USAEC announced last week. Occurring Nov. 1, 1952, at the weapons testing area in the Pacific, the experiments added materially to research data on hydrogen bomb operation.

The Atomic Energy Act has cut the United States off from any possibility of exchanging information in the field of nuclear science with friends and allies who cooperated with us during the war, Dr. Karl T. Compton, former president of MIT declared last week in an address prepared for delivery at a meeting of the Society of Naval Architects and Marine Engineers in New York. As a result, he said, there have been situations in which scientific knowledge is denied to American scientists although it is freely available to scientists of other nations. Dr. Compton said he was concerned with the attitude in some circles here where it is felt that that the best security of the country would be found in eliminating all contacts with foreign science and scientists. Another example of this is the McCarran Act, Dr. Compton pointed out, under which many scientists invited here because of the expected value of their contributions have been denied admission to the country or so irritated by red tape that they refused to come.

An International Conference on High Energy Nuclear Physics, to be held at Rochester, N.Y., Dec. 18-20, 1952, will be sponsored by the National Science Foundation and the University of Rochester. The conference will bring together some 70 nuclear physicists from the United States, Canada, and Mexico to discuss recent research findings on high-energy particles and to plan future studies in this field. (Other scientific meetings: page 3 this LETTER.)

A new 90-page Handbook on Air Cleaning, just issued by the USAEC, is essentially a report by the air cleaning laboratory at the School of Public Health, Harvard University, on how effective the currently used air-cleaning methods are. Cleaning of radioactive aerosols, and a useful bibliography are also included. The book may be purchased (45¢) from the Superintendent of Documents, Wash. 25, D.C., (Other books in the nuclear field: page 3 this LETTER.)

A program designed to encourage small domestic producers of beryl ore has been initiated by the General Services Administration. The ore will be bought by the Government in amounts up to 25-tons a year from individual producers at three purchasing depots. (Beryllium is used to some extent in nuclear reactors; this is one of the reasons for the ore, beryl, being classified as strategic.) (Other raw material news: page 4 this LETTER.)

Figures recently released show that as of the first week in September, 1952, the Defense Production Administration had approved four certificates of necessity for plant investment of approximately $5 million in uranium-radium-vanadium ore facilities. At that time, there were some seven such certificates pending, for a proposed investment of nearly $4 million. (Other business news: page 2 this LETTER.)

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BUSINESS NEWS...in the nuclear energy field...

Electric Power for New Gaseous Diffusion Plant- A finding of the Federal Power Commission will insure an adequate power supply for the uranium-235 producer plant in the Portsmouth, Ohio, area. Last week, a FPC spokesman stated in Washington that because of the urgent need for power, the Commission found an emergency will exist in the Portsmouth area until the Ohio Valley Electric Corp. is in a position to carry the load for the project. As a result of this decision, four utilities-Columbus and Southern Ohio Electric Co.; Dayton Power & Light Co.; Southern Indiana Gas & Electric Co.; and the Toledo Edison Co., will be permitted to use certain interconnections without affecting their status as intrastate operators. (These four utilities are among fifteen companies which will supply electric energy for the USAEC project until facilities of the Ohio Valley Electric Corp., and a subsidiary, now being built, can carry the entire load.) .....Financing arrangements for Ohio Valley Electric Corp., and a subsidiary (Indiana-Kentucky Electric Corp.) have now been accepted by the Securities & Exchange Commission. These arrangements include raising some $370 to $440 million by sale of debt securities to institutional investors and banks, and by sale of $20 million of equity securities to utility companies jointly involved in the enterprise.

Nuclear Power Plant for Submarine Involves Multiple Sub-Contracting- During the past 18 months some 3,028 different sub-contractors and suppliers were utilized by Westinghouse Electric's atomic power division which is working on a nuclear reactor to operate an underseas craft, that firm has now stated. Some 68% of Government funds (the work is under a USAEC and Navy's Bureau of Ships contract) have gone to sub-contractors and suppliers, according to C. H. Weaver, Westinghouse's manager of its atomic power division. He said that although the developmental work on this nuclear propulsion apparatus has been completed, there is a continuing need for what he termed "development" subcontracting of the continuing work of the atomic power division. Weaver pointed out that in some cases existing devices, such as pumps and valves, have to be re-engineered, manufactured, and extensively tested to meet conditions never before required. He emphasized that these are not small problems, and there are not just a few of them. (Westinghouse's atomic power division operates the Bettis Plant of the USAEC, Pittsburgh, Pa. This plant has been working jointly with the USAEC's Argonne National Laboratory, Chicago, for 3½ years on this submarine nuclear power plant. The land-based prototype is being constructed at the National Reactor Testing Station, Arco, Idaho. The hull, the keel plate for which was laid this past June 14, is being built by the Electric Boat Div. of General Dynamics Corp., formerly known as Electric Boat Co.)

Apparatus Maker Shows Sales Gain- An increase in net sales and profits for the 1952 fiscal year, as compared with its previous fiscal year, has been registered by Nuclear Instrument & Chemical Corp., Chicago, according to that firm's annual report, recently released. Net sales, which showed a better than 50% increase, reflect increased shipments of standard and special instruments and accessories, as well as sales of radioactive chemicals which were biosynthesized by special processes developed in the company's chemistry division.

Commercial Production of Electric Power from Nuclear Reactors- Commercial production of electric power from nuclear reactors may be no more than 4 or 5 years away, Charles A. Thomas, Monsanto Chemical Co. president, predicted at the annual meeting of the National Academy of Sciences in St. Louis last week. (Because of illness, Dr. Thomas's paper was read by another Monsanto official.) We anticipate the possibility of newly designed nuclear reactors, similar in some respects to those now in use, which will simultaneously produce plutonium for the atomic stockpile and electric power for civilian and industrial consumption, Dr. Thomas's paper stated.

Isotope Uses Outlined- Large-scale use of radioisotopes, in United States manufacturing, research, and medicine, is increasing, Dr. W. L. Davidson, director of the USAEC's Office of Industrial Development told the annual convention of the National Association of Real Estate Boards in Miami Beach last week. The most "enthusiastic" user of radioisotopes is the medical profession, Dr. Davidson pointed out.

PRODUCTS, PROCESSES & INSTRUMENTS...in the nuclear field...

Digital recorder, series 1550, is a printed readout for high-speed electronic counter. This recorder provides a direct means of permanently recording sequential count information in Arabic numeral form on a standard adding machine tape. It is designed to operate from electronic counters, time interval meters, nuclear scalers, and other electronic totalizing devices at a maximum cycling rate of one printout every 0.8 seconds.--Berkeley Scientific Div., Beckman Instruments, Inc., Richmond, Calif.

Decontaminating agent, said to work effectively as a radioactive surface decontaminating product. Called CP Cleaner, this product contains a wetting agent and a sequestering agent. According to the manufacturer, the product penetrates and sequesters ions, dirt, and grease, then holds them in suspension. Its neutral pH makes it effective for use on the human body, and on livestock.-- Enley Products, Inc., 254 Pearl St., New York 38, N. Y.

NOTES: An improved model of its machine to make Ferrolum lead-clad steel, and Cupralum lead-clad copper has been developed by Knapp Mills, Inc., Long Island City, N.Y. A lead thickness double that previously applied is now possible with the new machine, which also can apply the cladding in a 3½-in. band, as against the 2-in. maximum of the earlier model.

Radiation Counter Laboratories, Inc., Skokie, Ill. has included in its recently issued illustrated price list (no. 12) complete nuclear reactor instrumentation.

A 32-page booklet describing electronic instruments providing direct-reading digital presentation of information, and their principal industrial applications, is available from Berkeley Scientific Div., Beckman Instruments, Inc., Richmond, Calif.

BOOKS & OTHER PUBLICATIONS...in the nuclear field...

Modern Radiochemical Practice, by G. B. Cook and J. F. Duncan. A comprehensive text. 407 pages. --Oxford University Press, New York 11. ($8.50)

Handbook on Small Research Nuclear Reactors for Universities & Industry, edited by E. H. Wakefield. Written so that non-nuclear scientists, engineers, company managers, and educators may more readily understand and evaluate requests for research nuclear reactors. Available about Feb. 1953--Radiation Counter Laboratories, Skokie, Ill. ($6.00)

Civil defense technical bulletins now available include: (1) Emergency exposures to nuclear radiation; 5¢ (2) Personal dosimeters for radiological defense; 5¢ (3) Most promising personal dosimeters for civil defense use; 5¢ (4) Development status of personal dosimeters; 5¢ (5) Engineering equipment stockpiled for emergency water supply use; 5¢.--Superintendent of Documents, Wash. 25, D. C.

Pulsed Geiger Tube Operations, by S. W. Lichtman. 19 p. Work done at U. S. Naval Research Laboratory. --Office of Technical Services, Washington, D.C. (50¢)

IMPORTANT SCIENTIFIC MEETINGS...and nuclear energy subjects at them...

American Institute of Chemical Engineers, Annual Meeting, Dec. 7-10, 1952, Cleveland, Ohio. A paper on The Use of Radioactive Tracers for Continuous Analysis Under High Pressure, by H. G. Drickamer, K. D. Timmerhaus, and L. H. Tung, University of Ill., Urbana, is to be presented at this meeting.

American Association for the Advancement of Science, Annual Meeting, Dec.26-31, 1952, St. Louis, Mo. A symposium on nuclear science in industry will hear discussed, (1) Industrial Applications of Radioisotopes, by I. P. Orens; (2) Radioisotopes in Metallurgy, by H. R. Spedden; (3) Problems of Industrial Nuclear Power by J. Grebe; (4) Nuclear Power for Industry, by C. R. McCullough; and (5) Industrial Participation in the Nuclear Programs of the USAEC, by W. L. Davidson. Another symposium--research applications of carbon-14--will hear (1) Radiocarbon Dating, by J.L. Kulp; (2) Use of Carbon-14 in the Determination of Reaction Mechanisms in Organic Chemistry, by J. G. Burr; (3) Problems in the Use of Carbon-14 in Biochemistry, by S. Udenfriend; and (4) Applications of Carbon-14 to Plant Physiological Chemistry and Studies of Photosynthesis, by S. Aronoff.

The First British Nuclear Detonation; Based upon an account by Dr W. G. Penney, Chief Superintendent, Armament Research, Ministry of Supply, in charge of the operation. (This explosion was in the Monte Bello Islands, 85 miles nw. of Australia, the first week in October, 1952.)

You may be interested in getting a personal account from a scientist who took part in the trial (Dr. Penney stated).

A lot of thought was given to deciding what type of explosion would provide information and experience of the greatest value. The civil defense authorities in this country badly needed more data about atomic explosions, and accordingly the decision was made to explode the weapon in a ship moored near land, thus simulating an explosion in a port.

Admiral Torlesse was appointed to work with me. After much preparation, and when the Monte Bello Island site had been decided upon, the task force was ultimately ready.

I was on the Flight Deck of the Campania with Admiral Torlesse when the detonation occurred. Suddenly there was an intense flash, visible all aound the horizon. Then a great, greyish black cloud was hurled thousands of feet into the air. It seemed ages before we heard the bang, but it was, in fact, only a minute. A second bang which was heard was a reflection from a layer of warm air some two miles up.

Many comments have been made about the shape of the clouds and how different it was from the mushroom cloud with the very high stalk shown in most American pictures of atomic explosions. The great weight of the mud and water in the cloud at Monte Bello kept the cloud from rising very far. Even so, the top of the cloud at Monte Bello rose just over two miles above the sea. The explosion had some resemblance to that of the atomic weapon exploded by the United States in the waters of the Bikini Lagoon. The cloud there rose to a height of a little over one mile.

The peculiar "Z"-shape of the cloud ten minutes or so after the explosion was due to the strong winds blowing in quite different directions at different heights.

The experiment went according to plan, and the scientific records were complete. We know what happened, and we can give to the civil defense authorities some accurate answers to some of their problems.

So much for the trial. Now for the weapon itself, about which, of course, I can say little. You no doubt realize, if only from the cost of all large atomic energy projects, that the weapon is a complex affair. The fissile material and all equipment used at Monte Bello were made in Britain.

Finally, Mr. Churchill has said that the results of our atomic weapon program should be beneficial to public safety. As a scientist I should like most strongly to agree with this view. The energy and enthusiasm which have gone into the making of this new weapon stemmed essentially from the sober hope that it would bring us nearer the day when world war is universally seen to be unthinkable.

RAW MATERIALS...radioactive minerals for nuclear work...

CANADA- An intensified exploration of its uranium property is to be undertaken by Gunnar Gold Mines. While it has been planned to suspend drilling with the advent of cold weather, a full scale program throughout the Winter has now been decided upon. According to president Gilbert A. La Bine, results of initial work justify much more money being spent. These results are "very encouraging" according to a company official; however, chemical assays are presently being made to confirm Geiger assays.....Although normally the Beaverlodge Lake area "closes up" this time of year, with the advent of cold weather, the building boom in Uranium City there shows no signs of slackening. It appears as though uranium mining activity will continue right through the winter months.....Nearly all equipment necessary for the start of underground operations has arrived at the Beaverlodge area, Saskatchewan, property of Pitch-Ore Uranium Mines, the company reports. It is expected that driving of the adit will be under way in a few days....--Inspiration Mining & Development will have an undisclosed interest in the new uranium finds at Lake Nipissing, on the Manitou Islands there.

ATOMIC PATENT DIGEST...latest U.S. patent grants...

Fast neutron dosimeter. Comprising, in part, an envelope forming all but one side of a counter chamber, an electrode located axially within this chamber, a first plane hydrogenous slab forming one wall, with this slab having on one side of it a metallic sheet, and with a second plane hydrogenous slab on the other side of this metallic sheet. U. S. Pat. No. 2,616,052 issued Oct. 28, 1952; assigned to United States of America (USAEC).

Method and apparatus for measuring beam current. In part, the combination with a charged particle accelerating device of a continuous loop electrode, and electronic indicating means electrically connected to this electrode and to an equipotential point on this accelerating device whereby it is responsive to the phenomena detected thereby. U. S. Pat. No. 2,616,053 issued Oct. 28, 1952; assigned to United States of America (USAEC).

Disposal of radioactive cations. In part, the method of disposing of radioactive cations in solution which comprises bringing this solution into contact with a cation-exchange mineral consisting principally of montmorillonite to adsorb said cations on this mineral, and thereafter heating the mineral to a temperature in the range 750-deg. to 1100-deg. C. U. S. Pat. No. 2,616,847 issued Nov. 4, 1952; assigned to United States of America (USAEC).

Coincidence circuit. In part, in a coincidence circuit, the combination-comprising a first and second scintillation indicator disposed in spaced-apart relation along the path of a beam of charged particles, a first and second light responsive means respectively disposed adjacent each of said indicators for transforming light scintillations into electrical pulses, and associated circuitry. U. S. Pat. No. 2,617,042 issued Nov. 4, 1952; assigned to United States of America (USAEC).

Prospecting using gamma-ray detection. Apparatus for using gamma radiation from the earth, utilizing pulse type detectors, for prospecting from an aircraft. U.S. Pat. No. 2,617,945 issued Nov. 11, 1952; assigned to The Texas Co., New York.

Radiation detector circuit. A radiation measuring device comprising, in part, an ion chamber and a degenerative direct current amplifier. U. S. Pat. No. 2,617,946 issued Nov. 11, 1952; assigned to United States of America (USAEC).

Recording. Apparatus for recording the intensity of radio-activity, utilizing a chart device. U. S. Pat. No. 2,617,947 issued Nov. 11, 1952; assigned to The Texas Co., New York, N. Y.

Regulating system. A regulating system for maintaining an electrical quantity of a direct current load circuit substantially constant when supplied from an alternating current source of supply. U. S. Pat. No. 2,617,973 issued Nov. 11, 1952; assigned to United States of America (USAEC).

AT ATOMIC CITIES & CENTERS...in the United States...

NATIONAL REACTOR TESTING STATION, Arco, Idaho-Estimated to cost from $6 to $8 million, construction of the assembly, maintenance, and administrative area at the aircraft nuclear propulsion project here has now been opened to bids from contractors. Because of the complex nature and critical construction schedule of this project, the USAEC has set up special qualifications for eligible bidders, in addition to those customarily considered. Inquiries should be directed to A. C. Johnson, Dir., Div. of Engineering & Construction, Idaho Operations Office, Idaho Falls, Idaho.

HANFORD PLUTONIUM WORKS, Richland, Wash.-Richland's fifth housing addition, comprising some 500 homes and apartments, is now under construction by Bauer-Day, Inc., Portland, Ore. In connection with this development, street and utility work is at present being advertised to contractors by the USAEC here. Interested contractors may get further details from J. I. Thomas, Chief, USAEC Eng. & Construction Div., 760 Building, Richland, Wash.

Sincerely,

The Staff
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